General Biology

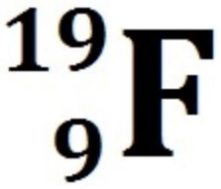
Unit 1 Pre-Test

1.) (3 pts) Describe the difference between an element and a compound.

2.) (3 pts) Fill in the following chart:

Subatomic particle	Location	Charge
electron		
neutron		
proton		

3.) (3 pts) Answer the following based on the diagram below.



Protons: _____

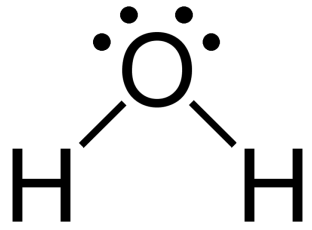
Neutrons: _____

Electrons: _____

4.) (3 pts) Describe the difference between a covalent and ionic bond.

5.) (4 pts) Name the six major elements of life. Why are they so prominently featured in organisms?

6.) a) (4 pts) Draw another water molecule appropriately bonded to the given water molecule.



b) (1 pt) This behavior is an example of what property of water?

7.) (3 pts) Describe the difference between thermal energy and temperature.

8.) (2 pts) How does sweating cool us down?

9.) (2 pts) Why does living by the ocean moderate temperature? Use specific terminology.

10.) (3 pts) Fill in the blank with the appropriate term.

i) Liquid, homogeneous mixture of two or more substances _____

ii) Dissolving agent _____

iii) Dissolved substance _____

a) solute b) solution c) solvent

11.) (3 pts) Define acids and bases in terms of H+ concentration.

12.) (4 pts) Calculate the pH based on each of the following:

a) $[H+] = 10^{-3}$

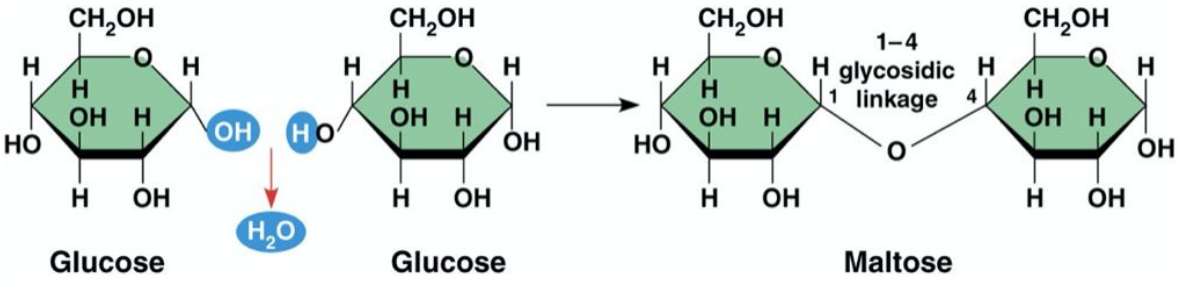
b) $[H+] = 10^{-8}$

c) $[OH-] = 10^{-9}$

d) $[OH-] = 10^{-6}$

13.) (2 pts) Define the idea of a buffer.

14.) (5 pts) What type of reaction is featured below? Describe what is happening in the process.



15.) (3 pts) What is primary protein structure?

16.) (5 pts) Describe how a protein folds in an aqueous environment. What is the key factor?

17.) (3 pts) What is protein denaturation? What are some of the main causes?

18.) (4 pts) Compare and contrast the structure and functionality of DNA and RNA.

19.) (3 pts) Describe the flow of information in a cell.

20.) (5 pts) Provide the complementary sequence:

5’ - GTCATGGCTAA - 3’

21.) (2 pts) Compare and contrast cellulose and starch.

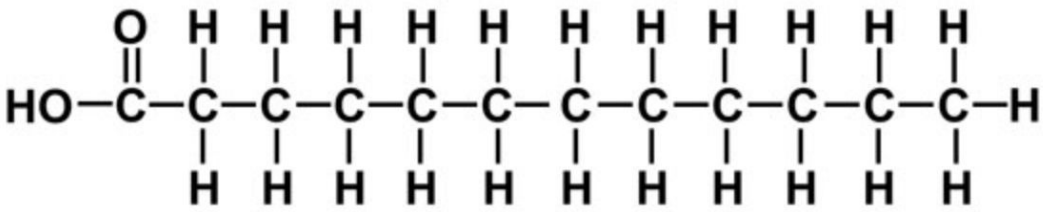
22.) (4 pts) What is the major structural difference between a saturated and unsaturated fatty acid? How does this difference affect melting temperature?

23.) (2 pts) Define amphipathic.

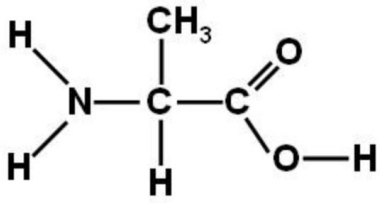
24.) (4 pts) Provide a major function for each of the macromolecules.

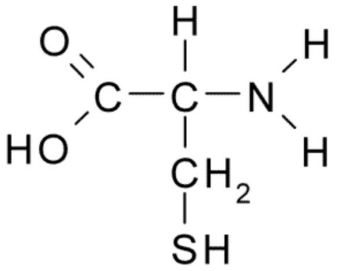
25.) (20 pts total) Name each of the following macromolecules. Circle and label each functional group.

a) (5 pts) _____

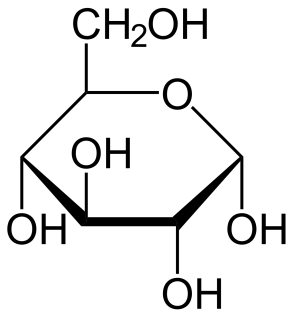


b) (5 pts)_____





c) (5 pts) _____



d) (5 pts) _____